

A PROJECT WORK ON
THE IMPACT OF CHILD LABOR ON EDUCATIONAL ATTAINMENT
(A CASE STUDY OF WOLKITE TOWN IN ETHIOPIA)

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THE IMPACT OF CHILD LABOR ON EDUCATIONAL ATTAINMENT
(A CASE STUDY OF WOLKITE TOWN IN ETHIOPIA)

Project work submitted to the Indira Gandhi National Open University in partial fulfillment of the requirements for the award of the Degree-Master of Arts in (Economics). I hereby declare that this project work has been done by me and has not been submitted elsewhere.

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1. INTRODUCTION

1.1 Back ground of the study

This paper will discuss the issue of child Labour in connection with education. Connecting child Labour with educational attainment is very logical, as child Labour is defined as an economic activity of a child that affects the child's educational activities. Therefore, it points to a normative view that every child, regardless of his or her background, should have the right to receive at least a minimum amount of schooling. This is because childhood is considered as the best time for the acquisition of education. So childhood should be devoted to education and accumulation of human capital, particularly through formal education. Hence, any discussion of Child Labour will lose importance if schooling is not incorporated into it. Also, as it is a widely held view that work reduces the time available for schooling by consuming the child's time with the alternatives of schooling. It is therefore important to address the incidence of child Labour on schooling performance and their future career.

The definition of Child Labour varies from one country to another country and from one individual to another individual. As a result, there is a variation in findings in different studies. So in this paper, I combine three very important and fundamental laws about children to find the precise definition of child Labour and to categorize child activities. First in its recent global estimates of child Labour, the ILO defines child Labour as consisting of all children who are economically active excluding those children who spend less than 14 hours a week on their jobs, unless their activities or occupations are hazardous by nature or circumstance. Second, according to the Ethiopian revised family code the parents bear full responsibility about their children until the child becomes 18 years old (Getaneh, 2000). Third, according to Ethiopian ministry of education, Primary school starting age (years) in Ethiopia is 7 years as of 2010. And since this paper want to examine the impact of child Labour on educational attainment, child labor in this paper defines as those children in the age range between 5 and 17 years and who spend more than 14 hours a week in doing any kind of jobs.

1.2 Statement of the problem

Childhood is the most innocent stage in a human life. It is that phase of life where a child is free from all the tensions, fun-loving, play and learns new things. Childhood represents the most tender, most formative and most impressionable stage of human development (encyclopedia). But this is only one side of the story. The other side is full of tensions and burdens. Here, the innocent child is not the sweetheart of the family members; instead he is an earning machine working the entire day in order to satisfy the needs and wants of his family and the joy associated with the birth of a child is short-lived as the childhood is subjected to a process of sex based discrimination and ruthless exploitation as soon as a child crosses infancy period.

International labour Organization (ILO) (1996) defines child labour as work that deprives children of their childhood, their potential and their dignity. It refers to work that is mentally, physically, socially or morally dangerous and harmful to children; and interferes with their schooling.

The UN Convention on the Rights of the Child defines a working child as one who is engaged in any work that is likely to be “hazardous” or to interfere with the child’s education or to be harmful for the child’s health, physical, mental, spiritual or moral or social development.

School is the main alternative to child Labour. Literacy and mathematical skills from the early childhood age are increasingly important in determining the child’s future career and in today’s rapidly changing technological environment and globalizing economy. It is, again, relevant to stress that education is a priority area, since two out of eight MDGs are related to it. This means that education has an intrinsic relevance. Moreover, it is often admitted that education can be a key factor for the obtainment of the other goals, such as reducing poverty and infant mortality, and improving maternal health. It is also quoted by IGNOU that **“Education is a liberating force, and in our age it is also democratising force, cutting across the barrier of caste and class, smoothing out inequalities imposed by birth and other circumstance.”** in every text book of the IGNOU reading material which has a strong and universal message for the current and future generation.

Article 32 in the UN Convention on the Rights of the Child also states that: “member countries recognize the right of the child to be protected from economic exploitation and from performing any work that is likely to be hazardous or to interfere with the child’s education, or to be harmful to the child’s health or physical, mental, spiritual, moral or social development. Member countries shall take legislative, administrative, social and educational measures to ensure the implementation of the present article.

Ethiopia has ratified the UN Convention on the Rights of the Child, ILO Minimum Age Convention No. 138, and ILO Convention No. 182 on the Worst Forms of Child Labour. UN Convention on the Rights of the Child has also been ratified by Ethiopia. It protects the child from economic exploitation, sexual exploitation, sales and traffic, recruitment in armed conflicts, participation in illicit production and trafficking of drugs etc. Ethiopia has ratified the Convention on the Rights of the Child by Proclamation No.10/1992. The FDRE Constitution under chapter three recognizes the rights of the person not to be held in slavery and servitude. When we come to children’s right, article 36(1) (d) states that every child has the right ‘not to be subjected to exploitative practices, neither to be required nor permitted to perform work which may be hazardous or harmful to his or her education, health or well-being’.

Though the Ethiopian government has ratified the UN Convention on the Right of the Child, Ethiopia has one of the highest rates of child Labour in the world. Of all 5-to 14-year-olds, more than 7.5 million children in absolute terms, were at work in economic activity (CSA, 2008). This might be related to several factors like poverty, inequality, socio-economic vulnerability, inadequate and inappropriate education opportunities and cultural norms and value.

The existence of these problems inspire the researcher to conduct a case study in Wolkite town in order to address the main factors affecting child labor and show the trade-off between child labor and educational attainment.

Specifically, in this paper the following questions are to be examined

1. What are the major factors for the existence of Child Labour in Wolkite town?
2. What are the Child Labour practices in terms of type, quantity and quality in the town?
3. What are the reasons that drive children to work or combine school with work instead of letting the child to learn only?
4. Is there any trade-off between working hours and schooling outcome?

5. If there what is the threshold hours of work?
6. Do any of these important questions have different answers for boys and girls?

1.3 Objective of the study

1.3.1 General Objective: The general objective of this paper is to investigate how child labour affects educational attainment and hence show the trade of between hours of child work and schooling outcomes of children.

1.3.2 Specific Objectives: The specific objectives of this study include:

- Provide an overview of the nature, extent and predominant forms of child Labour based on available data disaggregated by age, sex and geographic distribution in Wolkite town
- Analyse the underlying causes of child Labour, particularly economic factors and issues relating to education (non-availability of schools, quality of education, etc.).
- Estimates the trade-off hours between hours supply of child Labour and schooling outcomes.
- examine the implications of the current child Labour on the educational attainment of children in Wolkite town
- Provide empirical evidences and hence guidelines for policy making in the area of child labour and opens an agenda for further research.

1.4 Methodology of the project study

a) Data source and Type: Both primary and secondary data sources will be used in building this project paper. A descriptive research design-survey method will be used to serve the purpose of the research paper. Self-administered Primary data will be collected with the help of questionnaire in collecting the primary data source. Face to face interview method for own personal consumption is also used by the researcher.

b) Sampling Design: - to capture the exact information and reality on the ground, the researcher employed a purposive type of sampling. To determine the sample size, the researcher also use the Pagoso.C. Formula, i.e.
$$Fn = \frac{n}{1 + \frac{n}{N}}$$

Where, $n = \frac{z^2 pq}{ME^2}$

N = Total household size in the study area (in Wolkite town)

F_n = Desired sample size which is going to be estimated

z = Standard normal variable at the required confidence level (z - statistic)

p = Estimated characteristics or proportion of the target population, that is 0.5

q = 1 - p

ME = Level of statistical significance set.

c) Method of Data Analysis: the techniques of multinomial logit and probit regression models would be employed to analyse the determinants of child time allocation and the impact of child Labour on educational achievement respectively. The data collected will be analyzed with the help of descriptive statistics (mean, standard deviation, correlation coefficient). Econometric analysis with the help of Multinomial logit and probit regression models will be employed to analyse the determinants of child time allocation and the impact of child Labour on educational achievement respectively.

1.5 Significance of the study

The rationale behind conducting this project study is to contribute to the growing body of literature on the cause of child Labour and its impact on human capital development process. The underlying premise is that letting children to school only constitutes the linchpin of human capital development process. It can at once be viewed both as the means as well as the end of development. The findings of this project study can also be used in guiding policy makers and development planners who are concerned about children issues while designing children related projects in the country.

1.6 Scope of the study

There are a lot of consequences of Child Labour such as long term and short term economic Impact of Child Labour, health impact of Child Labour, political implication of Child Labour,

environmental impact of Child Labour etc at different level of study i.e. at village level, country level or worldwide level. However, in this paper, only the impact of Child Labour on educational attainment in one of the Ethiopian village towns, Wolkite town will be discussed.

1.7 Limitation of the study.

One major problem of the data collection process on child Labour is the difficulty to get the precise definition of child Labour. Varying definitions of the term are used by international organizations, non-governmental organizations, trade unions and other interest groups. Another limitation is with the measurement of compensation is particularly complicated. This is because most children do not work for wages which make difficult to get a detailed data on child Labour to measure their Compensation. But to avoid this problem, I employed hours of work per week to measure the impact of child Labour on educational attainment.

Finally, it had been great if the research would have been conducted at national or regional level to get more information on child Labour and its impact on education. But due to time and cost limitations this paper only covers the impact of child Labour on educational attainment of children in Wolkite town.

1.8 Organization of the project paper

The study is conducted to outline the trade-off between child labour and educational attainment a case study in Wolkite town. Accordingly, in the first chapter an introduction, statement of the problem, objective of the study, scope of the study, methodology and organization of the paper are included. Whereas, chapter two of this paper describes review of literatures on definitions, the theoretical concepts of child labour analysis and empirical trends of incidence of child labour in developing countries. The third chapter tries to examine the analytical framework, the methodology of the study; the fourth chapter focuses on discussion and result presentation. Finally chapter five concludes the entire discussion and gives some recommendation.

2. LITERATURE REVIEW

2.1 Theoretical framework

Children at their early age are expected to be in school and other constructive activities like playing with their peer groups. But in developing countries like Ethiopia they are forced to take up responsibilities at their early age either because of pressures from their parents, or their relatives, or other individuals, or their own respective living situations. As a result, many children voluntarily or involuntarily enter into the labour market either to meet their personal needs or family subsistence. The ways they take part in the labour market differ according to their vulnerability. Some children toil because of the abject poverty they experience. Some others engage in work to establish their own business. In general, socio-economic issues play vital role in the involvement of children in work. Now the question arises whether child labour is good or bad. One of the principal factors in deciding to put children to work is presumably the amount of income this work generates directly or indirectly. So whether one thinks that child labour is usually harmful or not, it is crucial to understand the determinants of child labour because, without quantitative underpinnings, one is likely to resort to well-meaning, but potentially poorly designed, policies that can intensify the poverty in which these children often live.

The conceptual framework of child labour supply and human capital formation trade-off is based on the standard economic assumption that individuals are rational utility-maximizers . In this simple theoretical model, I assumed that parents will allocate their children's time between working and schooling through their maximization of household utility. The human capital function of the child is assumed to be a function of time spent at school and school's expenditure for which individual household spent on school fee, textbooks, and other extra cost of child-schooling during the year. I assume that parents' utility function is defined by equation (1):

$$\text{MAX } U(\text{CP}, \text{CH}, \text{X}) \dots \dots \dots \text{Eq}(1)$$

Where: CP is the consumption of parents,

HC is human capital function of the child which is given by $\text{HC} = f(\text{E}, \text{CL})$ and

X is the household head, parents, children, household and school characteristics. As mentioned, the human capital formation of the child is the function of school's expenditures, E, and child labour time, CL which is expressed as:

$HC = HC(X, CL); \frac{\partial HC}{\partial E} > 0$ This is because as a household invest more on their children accumulation of human capital will be increased, similarly

$HC = HC(E, CL) ; \frac{\partial HC}{\partial CL} < 0$. This is also because as a child spend more time on work accumulation of human capital will be decreased

For simplicity we can write the household budget constraint as:

$$CP = IP(X) + CL - E \dots \dots \dots \text{Eq (2)}$$

By introducing a new variable (λ) called a Lagrange multiplier we can develop Lagrange function defined by

$$L = U(CP, HC, X) + \lambda(CP - IP(X) - CL) \dots \dots \dots \text{Eq (3)}$$

Parents in each household choose to maximize their utility (1) subject to (3). If we differentiate the Lagrange function with respect to expenditures, E, and child Labor time, CL we can derive the following equation.

$$\frac{\partial L}{\partial cl} = \frac{\partial u}{\partial cp} + \frac{\partial u}{\partial hc} \times \frac{\partial hc}{\partial(1-cl)}$$

$$\frac{\partial L}{\partial E} = \frac{\partial u}{\partial cp} + \frac{\partial u}{\partial hc} \times \frac{\partial hc}{\partial E} = 0$$

Now we can summarize the above (FOC) as follow:

If $\frac{\partial u}{\partial cp} > \frac{\partial u}{\partial hc} \times \frac{\partial hc}{\partial(1-cl)}$, child labour and schooling can be launch at the same time

If $\frac{\partial u}{\partial cp} = \frac{\partial u}{\partial hc} \times \frac{\partial hc}{\partial(1-cl)}$, The maximum case where child's working hours fully pay off schooling out come

If $\frac{\partial u}{\partial cp} < \frac{\partial u}{\partial hc} \times \frac{\partial hc}{\partial(1-cl)}$, Child's working hours is negatively correlated (become trade off) with child's schooling.

2.1.1 Graphical solutions of parent decisions concerning school-age children

Parents decide how to allocate the time of their school-age children and how much to spend on each of them with the aim of achieving as far as possible their objectives (including the well-being of the children), subject to the family budget constraint. Different types of solution are possible. The possibilities are illustrated in Figure 1, where the vertical axis measures the amount consumed by a school-age child, c , and the horizontal axis the amount of human capital, with which he or she have upon entering adult life. The broken line through points I and L is the production frontier, representing all the possible outcomes (efficient) household decisions. Its slope is equal to the marginal cost of human capital. The first type of solution occurs when the marginal cost of human capital is higher than the maximum that parents are willing to pay. If this is the case, the child is made to work full time, which is represented by point I in fig 1. The second type of solution arises when the marginal cost of human capital is lower than the minimum, below which parents want their children to study full time. If that is the case, the child does not work at all. This is the situation where the child's time is fully occupied in education, can be at L or at any point to the right of it (to the right of L, parents spend money for the child's education over and above the necessary minimum). In between these extremes, we have a third type of solution, where parents invest the child's time and expend other household resources to the point where the marginal cost of human capital is equal to the price that parents are subjectively willing to pay (the amount of consumption that they are willing to give up, in order to endow the child with one more unit of human capital). If this occurs, the child works and studies at the same time. If parents send their children to school at all, they also have to bear the educational costs such as tuition fees and the cost of books. The solution, where the child works and attends school at the same time, can be anywhere between I and L. The choice depends on parental preferences, represented by a map of indifference curves, such as the convex-to-the origin curve through point T, as well as on resource restrictions (reflected in the production frontier). In the figure, parents choose point T. This is a situation in which the child goes to school, thus ending up with more human capital than he or she was born with.

And consuming more, given the limitations imposed by the household budget constraint than if he or she studied full time.

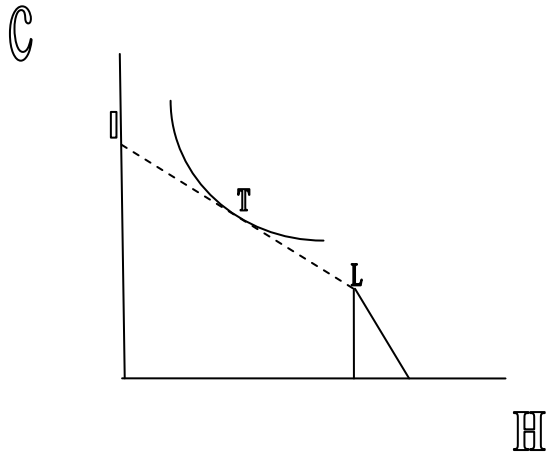


Figure 1: Parents decision how to allocate the time of their school-age children

2.2. Empirical literature.

2.2.1 Factors that determine the allocation of school aged children's time.

Even if there are different factors that determine the choice among the allocation of child time by the parent, suggested by Basu (1998), where the head decides on the partition of children's time, however, to be specific, I grouped them into five sets of characteristics which deemed to be the most determinant factors for child labour and schooling outcome trade-off. These are Child characteristics, Parent characteristics, Household, school and Household head characteristics.

Age of child: Older children may be able to earn greater market wages and may be more productive in household work. So the age can be a factor of children participation in the labour market. As a matter of fact, it could be possible that grown-up children can be demanded in the labour market. On an empirical point of view, the results of the works of Cockburn (2002) in the case of rural Ethiopia show a positive and squared relationship between the child age and the decision to put him/her into the labour market. Thus, for young children, the return to education may be sufficiently high that they spend all or most of their time in school, but the share of time in education may decline as the earnings opportunities gradually increase to older children.

Sex of child: Gender may play a role in whether the child works or attends school. The sex typing of different tasks and jobs may lead to gender differences in the returns to education or to gender differences in the return to employment outside of school. Admassie (2002) provides sufficient evidence that boys are less likely to specialize in work and are more likely to attend

school, or it is at least more highly probable that they will combine work with school attendance than girls. On the other hand, female children are more likely to take up home care tasks and are less likely to attend school than male children.

Household education: All models of schooling-for-age confirm that paternal and household head education has a stronger effect on educational attainment of children. For the entire sample Ross (2006) found that relative to the reference category of an illiterate father, the probability of falling behind is lower by 9 percentage points for children whose father can sign only, and is lower by 11 percentage points for children whose father can read and write. Similarly, compared to the baseline category (illiterate mother), the probability of falling behind in grade attainment is lower by 20 percentage points if the mother can read only and is lowered by 21 percentage points if the mother can read and write. Getenet and Beliyou (2007) also found parallel results indicating that children from households with their household head having at least primary education to be more likely to attend school and less likely to engage in exclusive market works.

Poverty: In developing country like Ethiopia poverty is the fore and the foremost causes of child labour. Meaning there is a positive relationship between the level of poverty and child labour. For example in Ethiopia from the 2001 survey about 90 per cent of the children those who were working in productive activities replied that they were working to either supplement family income (23.8 %) or to improve it (66.0 %). Admassie (2002) used panel macroeconomic data from Sub-Saharan African countries and showed that poverty has significant relationships with child labour (i.e. as the level of the poverty status of a household increases the probability that a child engaged in business activities is also increases).

Family size: The size and the composition of the households are equally a decisive factor of children participation to work. Within this context large family without sufficient incomes to satisfy their needs find their children involved in the labour market. Fafchamps and Wahba (2006) using data based on National Household Survey in Morocco; show that 53% of children who work come from households having three to five individuals. In addition, larger households may tend to be poorer because of scarcity of resource. In that case, the marginal utility of consumption will be higher (everything else equal) in larger households. This may shift children out of school and into working. Hence, household size may affect child labour supply. Further, it

is argued that large numbers of school aged children (aged 5–17) demand more resources to be put into their education which in turn forces them to be employed to make school possible for themselves and for their siblings. This may have a negative impact on their schooling outcome.

Cost of education: As discussed in the introduction section education is a key for any kind of changes. However, many, if not most; children are denied the opportunity to go to school due to the difficulty in affording school fees, books, uniforms and transportation costs like distance from school etc in most developing country. Most literature mentioned that the high costs of education for poor families are the overriding reason why children of poor households do not attend school. Poor households cannot simply afford to send their children to school even with free primary and secondary education. This is because the attendant costs of sending children to school are too much for a low-income household (Kurosaki, 2006).

Household income: This variable measures how strong are income effects of household on school enrolment and child labour participation in developing countries. Filho (2008) used variation in old-age benefits received by rural workers due to a reform in social security benefits to identify the effect of income on labour outcomes and school enrolment of children of ages 10-14 in Brazil. The results in his paper imply that old-age benefits have the effect of increasing school enrolment of girls corresponding with old-age beneficiaries, particularly a \$100 of old-age benefits received by household members' increases school enrolment rates of girls by 6.2 %.

Household assets: This attribute analyses to what extent and under what conditions an increase in household wealth can lead to a decline or increase of child labour in a given household. Fuwa et al. (2006) examined the link between crop shocks, household asset holdings, and child labour and found that crop shocks lead to a significant increase in the level of child labour and that households with assets are able to offset approximately 80% of this shock. Bhalotra and Heady (2003) demonstrate findings from Ghana and Pakistan in which the children of land-rich households are more likely to work (and less likely to be in school) than their counterparts in land-poor households. This is a finding they label a “wealth paradox” since it challenges the notion that child labour is observed more often among children in poor households.

The number of babies under ages five. Bacolod et.al. (2004) by using two definitions of labour, one that measures only market oriented activities, which label the restrictive definition

and a second more definition that considers hours dedicated to domestic work and by using data from Bolivia's national household survey (MECOVI) found that the presence of a pre-school aged sibling (aged 5 or younger) is negatively correlated with the likelihood of children's schooling when the work definition includes domestic tasks. This finding suggests that the availability of alternative childcare would help increase the likelihood that some children attend school.

Credit constraints: If borrowing from the capital market becomes difficult or impossible then according to imperfect capital market theory, parents will be forced to borrow across generation. In allowing the child to attend school, the family incurs various out-of-pocket costs of school attendance apart from the 'income' the child could have earned by working instead of attending school. So families may not be able to bear the direct as well as the indirect costs of school attendance if they are poor and do not have access to alternative sources of income. In such situations, child work becomes a rational outcome of parents' decision in an attempt to ensure the survival of the whole family (Jafarey.S, 2001). In economic jargon, intense poverty shrinks the time horizon of households to the short run. This means that households are willing to forego future income for current consumption; thus, future benefits have very little value to households whose immediate concern is survival. In the review of recent empirical studies, a key solution to child labor is the provision of liquidity to poor households.

Quality of education: School helps young people acquire the basic life skills and competences necessary for their personal development. Kabeer et.al (2003) proofed that the quality of education affects not only their development, but also his or her place in society, educational attainment, and employment opportunities. The quality of education may be linked to teaching standards, which in turn are related to the demands placed upon teachers, the training they receive, the roles they are asked to fill and availability of educational materials such as availability of text book enough class room etc. But this paper distinguishes the quality of education between private and public sector.

2.2.2 Effects of work hours on school performance

The outcome of child labour has been argued about over many decades, and findings are varied depending on historical, political, social and economic factors. This section will review the

current body of literature and highlight some key results relevant to the effects of work hours on school performance.

Some scholars in child labour argued that all forms of child labour are no longer seen as bad for children. Cockburn (2002) estimated a household income function derived from an agricultural household using Cobb-Douglas (CD), Generalized Cobb-Douglas (GCD), Trans log and Generalized Leontief (GL) model in Rural Ethiopia with child work inputs finds that the average total income contribution of working children, per child worker, is between 4.4 and 6.8% of total household income. Some help build character by teaching punctuality, discipline and rigor which are socially valuable qualities (Ray,2000) .Work enables children to meet their basic needs, develop self-confidence, high self-esteem, a sense of self-reliance and responsibility, and good social interaction (Beliyou , 2003). These results suggest that child work makes a significant income contribution. These set of facts has led to the admission that child labour should be tolerated in poor countries, at least in its non-hazardous forms.

Another school of thought, however, argued that child labour adversely affects a child's human capital formation in various ways .In other word; the consequence of child labour is strongly negative. Patrinos (1997) determine that the same factors that predict an increase in child labour also predict reduced school attendance and an increased chance of repetition. Watson (2008) by using data collected by the Young Lives team in Vietnam during the second round of quantitative data collection in 2006/7 on the educational attainment of 12- year-old children in Vietnam found that a child who increases their child labour levels from 0 to 1 hour per day will obtain a test score which is 21 % of a standard deviation lower compared to if they had remained not working. Similarly Heady (2003) used the direct measures of reading and mathematics ability and conclude a negative relationship between child labour and educational achievement in Ghana. Ross (2006) examines the linkages between child work school attainment of children aged 5–17 years using data from a survey based in rural Bangladesh and they found significant and negative coefficients of the work variable providing evidence that work has a negative impact on a child's schooling progress. A study by Boozer (2001) on Ghana explored the linkages between child work and both school attendance and school attainment of children aged 5-17 years using data from a survey based in rural Ghana found that an hour increase of child labour decreases school attendance by .38 hours. The central message from this study is that child labour adversely affects the child's schooling, which is reflected in lower school attendance

and lower grade attainment. By controlling for a large number of covariates and correcting for all sources of endogeneity bias by incrementing child working hours with a set of industry dummies Ahmed (2011) investigates the trade-off between child labour hours and child schooling outcomes in Bangladesh and found that children's work, even in limited amount, does affect child education, reflected in reduced school attendance and age-adjusted school attendance rates. Akabayashi (1999), for example, found that a child's reading and mathematics ability decreased with additional hours of work, whereas they increased with additional hours of school attendance and study. In their study Lancaster and Ray (2005) investigated the effect of work on the school attendance and performance of children in the 12-14 year age group in seven countries, particularly in terms of the relationship between hours of work and school attendance and performance and they concluded that hours spent at work had a negative impact on education variables. Getinet and Beliyou (2007) results from tobit estimation of the equation for age-adjusted educational attainment found an inverse association between hours of work and educational attainment implying the detrimental impact that long hours of work have on human capital formation.

Others have hypothesized a U-shaped relationship between hours worked by children and schooling outcomes. For example phoumin (2007) developed a U-shaped relationship between hours worked by children and schooling outcomes in Cambodia. Admassie et al.(2003) also detected a non-linear relationship between the hours of work and the school attendance/reading and writing ability (RWA) of children. They found a positive link between working and schooling/RWA initially. However, RWA began to suffer if a child worked above 16-22 hours per week, although it had no effect on school attendance. If a child worked beyond this threshold, both school attendance and RWA could be affected.

2.3 Summary of reviewed literature

There are mixed results concerning the cause of child labour and its outcome .One group argue that child labour tends to be a phenomenon related to poverty and difficult social conditions while others said that poverty alone is not the driving force that leads a child to work. Regarding the consequence some argued that child Labor is good because it generates income for the family but others said child Labor affects accumulation of human capital. In the literature part most authors use class attendance to measure the effects of child work on school attainment. But the

use of school attendance as a measure of educational achievement is not ideal for estimating the harm caused by child labour. On the one hand, it might over-estimate the harm of child work, overlooking the impact of the poor quality of many schools in developing countries like Ethiopia or the fact that a child may learn informally. On the other hand, it might under-estimate the harm of child work, because children that work as well as going to school may find themselves less able to learn, as a result of exhaustion or insufficient time to complete homework. Some scholars also used reading skills and mathematics ability to measure the impact of child labour on education. This method has also draw backs in that there are no standard instruments to measure the reading skills and the mathematical ability of the child and it is boring and time consuming because it requires asking mathematics and English or Amharic questions for each child. So the researcher of this project work used Probit regression model, which helps to quantify the impact of child labour on schooling attainment through working hours threshold and learning measuring variables of schooling attainment relative to age (SAGE index) as dependent variable.

3. METHODOLOGY

3.1 Data sources and model construction

3.1.1. Description of study area

Geographical features: Wolkite town is situated about 155 km and 430 km far from Addis Ababa the capital city of Ethiopia and Hawassa the capital city of South Nation, Nationality& Peoples Regional State (SNNPRS) respectively. It is situated along the main road that leads from Addis Ababa to Jimma, and from Addis Ababa to hosanna, these road crosses the town North to West and from North to South. Wolkite is the administrative town of Guraghe zone. Astronomically the town lies around the geographic coordinates $07^{\circ}10'08''$ North latitude and $37^{\circ}45'-37^{\circ}50'$ East longitude.

Demographic features: According to Central Statistical Agency (CSA, 2007) Wolkite town has the total population of 28,856 and out of which 14,332 are male and 14,524 are female.

Main economic activities: In the town, many agricultural and industrial products, especially cereal crops, cash crops, wood and wood products, fruits and vegetables, live animals, industrial

products which are supplied to the town from different corners and out going to other parts of Guraghe Zone and to different parts of Ethiopian territory. The main types of commercial activities are, Service Rendering Establishments, Retail Trade, Whole sale Trade, Small scale and Manufacturing's and Informal Trade, which are likely to demand high child Labour.

Existing Stock of Educational Facilities: According to the data collected from the Education office of Wolkite town there are totally 21 schools, including kindergartens that currently give educational services. These are 9 kindergartens (KGs) 11 primary schools and 1 secondary school. Among these 57% is owned by private (entrepreneurs, NGOs or religious/faith based schools), whereas 43 % are owned by Government. Distribution of schools by level of education and ownership is shown in table 3.1.

Table 3.1: Existing Schools by Grade level and Number of School in Wolkite town

No.	School level	Grade level	Private	Government	total
1	Kindergarten school	From level 1-3	7	2	9
2	Primary School	From1-8	5	6	11
3	General secondary School	9-12		1	1
	Total	-	12	9	21

Source: From Wolkite educational administration office

3.1.2 Definition of important terms

School only: School activity is self-explanatory. Children attending school who report no work as wage worker or as timely enterprise worker.

School and Work: Children attending school who report work for some number of hours as wage work or family enterprise during the reference week.

Work only: Children not attending school and report wage work or work at family enterprise.

Inactive: Are those children who reported as no school and no work.

3.1.3 Data Collection Methods and Sampling Technique.

The primary data was collected exclusively for the present study by distributing a questionnaire and interview through adopting purposive sampling technique. The town is divided in to two sub cities (Addis and Bekure sub city) and five Kebele (Selamber, Menaheria, Edgetchora, Edgetber and Addisheywot) and there are a total of 8893 head of households that are found in Wolkite town. So I sample the two sub cities with a total sample size of 200 household. Those head of households will be interviewed who have at least one child in the age group of 5-17 years. This is because I am conducting a research on the impact of child Labour on educational attainment and usually children below 18 years are under the control of their family and the average number of children per household is 2.33.

As described above, the total sample size for this paper is 200. And lucky enough there are 200 groups in Wolkite town which are organized for waste management disposal system and each group contains 45 household in. Choosing numbers from the table is the same as drawing numbers out of a hat containing those numbers on thoroughly mixed pieces of paper. So I draw a simple random sample of one household to be selected out of 45 households. I numbered the household from 1 to 45, put slips of paper containing these numbers into a hat, mix them, and then I draw 1 out of 45.

6% Level of statistical significance or margin of error is set for possible losses in the survey, some of the planned interviews may fail to take place because people are absent from their homes and/or because of refusals

3.2 Modeling child time allocation and educational attainment

3.2.1 Multinomial Logit Regression Model

Child's activities' is a categorical variable, consisting of child works only, child combines work with study, child studies only and child become idle. So In this paper, I consider the multinomial logit (MNL) model to estimate simultaneously the determinants of work, study, inactive and combining both. This is because Parental decisions on the allocation of children's time are likely

to consider more than one activity, necessitating simultaneous modelling of the alternative uses of children's time.

Let Y_i denote the polytomous variable with multiple unordered categories. Suppose there are j mutually exclusive categories and $P_{i1}, P_{i2}, \dots, P_{ij}$ and P_i are the probabilities associated with j categories. In this case, we have four categories ($j = 4$);

$j = 0$ If the child attends school only,

$j = 1$ If child remain idle,

$j = 2$ If child works and attends school,

$j = 3$ If the child works only.

The value (typically the first, the last, or the value with the highest frequency) of the dependent variable is designated as the reference category. For a dependent variable with J categories, this requires the calculation of $J-1$ equations, one for each category relative to the reference category, to describe the relationship between the dependent variable and the independent variable.

Hence, for each case, there will be $j-1$ predicted values, one for each category relative to the Reference category.

By considering ' $j=0$ if the child attends school only as the base/reference category, the probabilities and the likelihood function of the multinomial logit model can be expressed as follows:

$$\Pr(y_{ijm} = 0/x_{ijm}) = p_{im0} = \frac{1}{1 + \exp(\beta_1'x_{ijm}) + \exp(\beta_2'x_{ijm}) + \exp(\beta_3'x_{ijm})} \dots \text{Eq. (4)}$$

$$\Pr(y_{ijm} = 1/x_i) = p_{im1} = \frac{\exp(\beta_1'x_{ijm})}{1 + \exp(\beta_1'x_{ijm}) + \exp(\beta_2'x_{ijm}) + \exp(\beta_3'x_{ijm})} \dots \text{Eq(5)}$$

$$\Pr(y_{ijm} = 2/x_i) = p_{im2} = \frac{\exp(\beta_2'x_{ijm})}{1 + \exp(\beta_1'x_{ijm}) + \exp(\beta_2'x_{ijm}) + \exp(\beta_3'x_{ijm})} \dots \text{Eq(6)}$$

$$\Pr(y_{ijm} = 3/x_i) = p_{im3} = \frac{\exp(\beta_3'x_{ijm})}{1 + \exp(\beta_1'x_{ijm}) + \exp(\beta_2'x_{ijm}) + \exp(\beta_3'x_{ijm})} \dots \text{Eq(7)}$$

In general, for an outcome variable, YI with j categories, the probability can be modelled as:

$$\Pr(y_{ijm} = J/x_i) = p_{ijm} = \frac{\exp(\beta_{ijm} \cdot x_{ijm})}{1 + \sum_{j=0}^{j-1} (\beta_{ijm} \cdot x_{ijm})}, \text{ for } J \neq 0 \dots\dots\dots \text{Eq(8)}$$

$$\Pr\left(y_{ijm} = \frac{0}{x_i}\right) = p_{im0} = \frac{1}{1 + \sum_{j=0}^{j-1} (\beta_{ijm} \cdot x_{ijm})}, \text{ for } J = 0 \dots\dots\dots \text{Eq(9)}$$

The most important task to compute the estimators of explanatory variables is computing the maximum likelihood estimation. Given the P {Y_i= j} and the total sample size numbers of children k, log likelihood function will be:

$$\log L = \sum_{i=1}^n \sum_{j=0}^3 y_{imj} \log P_{imj} \dots\dots\dots \text{Eq(10)}$$

Where,

J represents child activities j=0, 1, 2 and 3

m represents the mth household m =1,2,3,...,200

i represents the ith child from household m i=1, 2, 3.... n. So *ijm* is read as child *i* in category *j* from household *m*

n is the total number of sampled children=466 i.e. (200*2.33)

$$\sum \beta_i x_i = \beta_0 + \beta_1 \text{Cage} + \beta_2 \text{Cgen} + \beta_3 \text{Educ} + \beta_4 \text{hage} + \beta_5 \text{Hgen} + \beta_6 \text{Mlit} + \beta_7 \text{Flit} + \beta_8 \text{Asst} + \beta_9 \text{Hhs} + \beta_{10} \text{Acc} + \beta_{11} \text{Eduq} + \beta_{12} \text{infant} + \beta_{13} \text{Hhsize} + U_i.$$

Where, $\beta_0, \beta_1, \dots, \beta_{13}$ are coefficients or parameters, Cage is child age between 5 to 17 years old, Cgen is child gender, Educ is cost of education, Hgen is household head gender, Mlit is mother's literacy, Flit is father's literacy, Asst stands for asset ownership, Hhs stands for households economic status, Acc stands for access to credit, Eduq stands quality of education, infant stands for children below four years old, Hhsize represents the no. of members in the family, while U_i represents for the stochastic error term or stochastic disturbance throughout this paper.

3.2.2 Probit Regression Model

Commonly used dependent variable, measure of school attainment is schooling-for-age (SAGE) It is given by

$$\text{SAGE} = (G / (\text{Age} - E)) * 100 \dots\dots\dots \text{Eq(11)}$$

Where, G is highest grade of formal schooling attained by the child, Age is child age and E is the official school entry age. But the above equation becomes undefined and meaningless when age

of the child and school entry age are equal. To avoid this problem I modified the above equation without changing its meaning as follows

$$SAGE = (G+E) - Age \dots\dots\dots Eq(12)$$

SAGE is now converted into a dichotomous variable that takes the value 1 if a child has normal progress (that is, $SAGE \geq 0$), and 0 if a child is falling behind in the schooling system (that is, $SAGE < 0$). Since we have only two outcomes the appropriate model for the above equation is the logit or probit regression model. But to avoid repetition, I used probit regression model.

The estimating model that emerges from the normal cumulative density function (CDF) is popularly known as the probit model. The probability of the i^{th} child to attain normal educational progress or not depends on an unobservable index (also known as a latent variable), that is determined by one or more explanatory variables, in such a way that the larger the value of the index, the greater the probability of a child to attain normal educational progress. We express the index as.

$$SFAG_{ijm} = \sum x_{ijm} \beta_{ijm} + \epsilon_{ijm} \dots\dots\dots Eq (13)$$

Where; β is vector of parameters of the model, X is vector of explanatory variables and ϵ (the error term) and is assumed to have random normal distribution with mean zero and common variance σ^2 .

And the observability criteria for the outcome is given as

$$Q_{ijm} = \begin{cases} 1 & \text{if } SFAG_{ijm} \geq 0 \\ 0 & \text{otherwise} \end{cases} \dots\dots\dots Eq (14)$$

The model expresses the probability (P) of a child being enrolled in school/falling behind in grade attainment as a function of regressors. The probit model assumes that the error term ϵ_{ij} is distributed according to the cumulative normal distribution function. Therefore, the probability (P) of a child being enrolled in school/falling behind in grade attainment P_{ijm} can be written as:

$$P_{ijm} = Pr(Q_{ijm} = 1 | x) = \int_{-\infty}^x \frac{1}{\sqrt{2\pi}} \exp\left(-\frac{1}{2}(x^2)\right) dx.$$

The marginal effect

The coefficients from the probit model are difficult to interpret because they measure the change in the unobservable dependent variable associated with a change in one of the explanatory variables. A more useful measure is what we call the marginal effects.

$$ME_j = \frac{\partial P(Q_i = 1)}{\partial x_{ijm}} = \frac{\partial F(\sum x_{ijm} \beta_{ijm})}{\partial x_{ijm}} = F'(\sum x_{ijm} \beta_{ijm}) \beta_{ijm}$$

Where

Q_i is either enrolled in school or falling behind.

P_i refers to the dependent variable probability of the event, X_i to the i^{th} independent variable, B_i to the probit coefficient for that variable, these coefficients are partial derivatives that indicate the direction of change in the probability of enrolment (or falling behind in grade attainment) relative to a unit increase in the independent variable. And

$$\sum x_{ijm} \beta_{ijm} = \beta_0 + \beta_1 \text{cage} + \beta_2 \text{cgen} + \beta_3 \text{Educ} + \beta_4 \text{hage} + \beta_5 \text{hgen} + \beta_6 \text{mlit} + \beta_7 \text{flit} + \beta_8 \text{asset} + \beta_9 \text{hhs} + \beta_{10} \text{acc} + \beta_{11} \text{eduq} + \beta_{12} \text{infant} + \beta_{13} \text{hhsz} + \beta_{14} h_i + \beta_{15} h_i^2 \dots \text{Eq}(15)$$

Where, h_i is hours of work by children aged 5 to 17 years, and h_i^2 is hours of work squared. Other factors held constant, we use First Order Condition (FOC) on (14), with respect to hours worked to check the turning point of the hours worked of the child that beyond this turning point hours worked threshold of the child will trade-off with human capital formation. We can derive:

$$\frac{\partial F A G_{ijm}}{\partial h_i} = \beta_{14} + 2\beta_{15} h_i = 0$$

$$-2\beta_{15} h_i = \beta_{14}$$

$$h_i^* = \frac{-\beta_{14}}{2\beta_{15}} \dots \text{Eq}(16)$$

The parameters, β_{ijm} is obtained through maximum-likelihood estimation. The likelihood function used is:

$$L = \prod \int_{-\infty}^{\sum x_{ijm} \beta_{ijm}} \Phi(\epsilon_i) d\epsilon_i \dots \text{Eq}(17)$$

Where, ϕ is the normal density function.

Table 3.2: The lists of explanatory variables and dependent variables used in the three models

Variables	definition
Dependent variable	
(P1) Child remain idle	1 Child remain idle, 0 otherwise
(P2) Schooling and work	1 if child combines both schooling and work, 0 otherwise
(P3) Child doesn't go to school but to Work	1 if child works but no schooling , 0 otherwise
SAGE is converted to a dichotomous variable	1 if a child has normal or above normal educational attainment (i.e. $SAGE \geq 0$) 0 if a child has below normal progress (that is, $SAGE < 0$), i.e. is falling behind in schooling

List of independent variables

Independent Variable Name	Description of variables
Characteristics of child	
1. Cgen (Child's gender)	= 1 if child is female, 0 otherwise
2. Cage (Child's age) Child's age in completed years	=Number of years
3. Hw(hours of work by the child)	=number of hours of work per week
4. Hw ² (hours of work square)	= number of hours of work square

Parent Characteristics

- | | |
|------------------------------------|--|
| 5. Flit [Father's literacy status) | 1 read and write 0 if father is Illiterate |
| 6. Mlit (Mother's literacy status) | 1 read and write 0 if Mother is Illiterate |

Household head Characteristics

7. Hgen (head of household's gender) 1 Hgen is female, 0 otherwise 1
8. Hage [head of household's age] =Number
-

Household Characteristics

9. Asst (Household's ownership of assets) 1 if the household has ownership of assets, 0 otherwise
10. Hhs [household's economic status] (and 1= if the household is above poverty line (non poor). 0 = if the household is below poverty line (poor))
11. Hhsize [household size]. Total Number of household members
12. ChildO4 (Pre-school age children) Total Number of children ages up to 4 years in the household
13. Access to credit facilities within the past six month =1 if Yes 0 for No
-

4. RESULT AND DISCUSSION

4.1 Descriptive analysis

4.1.1 Distribution of children by activities and gender

In 200 households, there are a total of 466 children between ages 5 and 17 years, implying that every household on average has 2.3 children between ages 5 and 17 years (Table 4). Of the total number of children, 187 children (40 %) combine a schooling and work; 105 children (22 %) attend school only, 36 children (8 %) are inactive and 138 children (30 %) are involved in full time work. Table 4.1 provides the pattern of child time allocation by gender and location. Boys account slightly higher than girls in all categories; while 16% of boys aged 5-17 are working, 14% of the girls of the same age found on working category. In the sample, 22% of boys and

18% of girls are reported to be combining work and school. Finally, boys and girls account for 11% and 4% each for school only and inactive category respectively.

From this discussion, we can conclude that the share of children combining both Labour and schooling account for the largest of all categories. Furthermore, there are four mutually exclusive and exhaustive categories: study only, inactive, work only and work and study. Thus work and study are not mutually exclusive categories, and do not exhaust the list of possibilities.

Table 4.1: Distribution of Children by activities and gender

Activity		School only		Inactive		School &work		Work only		all	
		n	%	n	%	n	%	n	%	n	%
gender	m	53	11	18	4	102	22	74	16	247	53
	f	52	11	18	4	85	18	64	14	219	47
all		105	22	36	8	187	40	138	30	466	100

Source: own computation

4.1.2: Distribution of children activity by location and gender

In the study area, the distribution of child activity is not uniform across locations. Notice that out of 105 children, who are in school only category, 30 (6%) children are from Selamber Kebele followed by Menaheria (5%) and Addis heywot (5%).Whereas Edgetber and Edgetchora received the least number in school only category which is 3% respectively. With regard to work only table 4.2 reveals that from the total sample size Edgetber received the greatest inflow of child labour only category (10%) followed by Edgetchora (8%). Whereas the smallest number of child work only are observed in Selamber Kebele and Addisheywt which is (3%) for both. The reason why Edgetber received the greatest number of child Labour only category is that in Edgetber there is high economic activities that for one reason those bus that come from Addis Ababa get parking service in Edgetber and for another Wolkite high school is found far away from this Kebele. So due to these and other reason the children in Edgetber are forced to engage in economic activities. But there is no considerable disparity in school and work category in the study area. All the four Kebeles received similar number except Edgetber which has only 4% out of 187 children, who combine school and work at the same time.

Table 4.2: Distribution of children activity by location and gender

Keble		Selamber		Menaheria		Addisheywet		Edgetchora		Edgetber		all	
activity	sex	n	%	n	%	n	%	n	%	n	%	n	%
School only	boys	17	4	13	3	10	2	7	2	6	1	53	11
	girls	13	3	11	2	13	3	8	2	7	2	52	11
	all	30	6	24	5	23	5	15	3	13	3	105	23
inactive	boys	3	1	4	1	3	1	3	1	5	1	18	4
	girls	2	0	3	1	7	2	4	1	2	0	18	4
	all	5	1	7	2	10	2	7	2	7	2	36	8
School and work	boys	36	8	20	4	19	4	18	4	9	2	102	22
	girls	14	3	15	3	26	6	22	5	8	2	85	18
	all	50	11	35	8	45	10	40	9	17	4	187	40
Work only	boys	10	2	11	2	6	1	27	5	30	6	74	16
	girls	6	1	11	2	10	2	12	3	15	3	64	14
	all	16	3	22	5	16	3	39	8	45	10	138	30
total	boys	66	14	48	10	38	8	58	12	47	10	247	53
	girls	35	8	40	9	56	12	49	11	29	6	219	47
	all	101	22	88	19	94	20	107	23	76	16	466	100

Source: own computation

4.1.3 Distribution of child Labor by occupation

Children who participated in both economic activities and domestic duties were asked to state the type of work in which they had participated. Table 4.3 presents the distribution of working children by occupation. The type of work that children engaged in the study area comprise both domestic and market related activities .Domestic work includes housekeeping, such as cleaning, cooking(for their family or part time job), washing, fetching supplies, and child care. And market related activities include shoe shining, selling lottery ticket, collecting and selling fuel wood, loading goods, construction workers etc.

When questioned the percentage of child labour activities by engagement table 4.3 revealed that 107 (32%) respondents said they engaged in housekeeping which includes cleaning, cooking (for their family or part time job), washing, fetching supplies, child care etc; 35 (11%) respondents

claimed that they were engaged in Shop keeper; 31 (9%) respondents reported that they engaged in Shoe shining while 25 (8%) respondents said that they were selling lottery ticket. Also collecting and selling fuel wood, selling food items such as Kollo, Enjera, etc, selling non-food items such as Tej, Tella ,Araki ,Chat , Selvage, etc. comprises 56 (19 %) of the total sample. The data presented below show that in the study area, the percentage of children who engaged in child labour varies in the types of child labour they engaged in.

Table 4.3: Distribution of Children by Occupation

Occupation	Frequency	%
Shoe shining	31	9
Selling lottery ticket	25	8
Collecting and selling fuel wood	15	5
Loading goods	10	3
Shop keeper	35	11
Construction workers	20	6
Selling non-food items such as Tej, Tella ,Araki ,Chat , Selvage, etc.	19	7
Waiter, kitchen worker	23	7
Selling food items such as kollo,injera, etc	22	7
housekeeping	107	32
Cooking food (full time job)	23	7
Total	332	100

Source: own computation

4.1.4 Reasons for Child Labour in Wolkite town

According to the International Labour Organisation (ILO) and other child labour organizations, child labour is a result of multitude of socio-economic factors and has its roots in poverty, lack of chances, high rate of population, unemployment, irregular distribution of wealth and resources and out dated social customs. In table 4.4 , the three major reasons for children not attending school only are, to have money for schooling (pay school fees or buy school supplies) (20%), needed for housework (15 %) and supplement family income because the family needs money for food for survival (14%).These reasons apply to both males and females.

Table 4.4: Causes that drive children to work in Wolkite town

Reasons	Frequency	%
Needed for Housework	50	15
Supplement family income because the family needs money for food for survival	46	14
The family needs money to pay off debts	15	4
Learn skills	4	1
Help in household enterprise	34	10
Cannot afford school fees.	38	11
Education is not Useful because there is/are graduate student/s in home or neighbour who did not get job	7	2
To have money for schooling (pay school fees or buy school supplies)	67	20
To have money for personal needs	35	10
To get away from the house	8	2
Don't like school/cannot study	5	1
Failed in grade 8	10	3
School too Faraway	20	6
Total	339	100

Source: own computation

4.1.5: Distribution of children activity by household income

The presence of low household income is another reason that forces children to work to sustain themselves by helping their families. Households will not send their children to labour market if their income is sufficiently high.

It can be seen from table 8 that the monthly wage of household and child labour are inversely related; as household's wages improve the incidence of child labour decreases and at the same

time, as household's wages deteriorates, the incidence of child labour increases. Approximately 66 % working children's father receive monthly wages below birr 1050. And it can be observed that 43% of mothers of working children are found in the lowest income group of up to birr 600. Further up in the income category where mother's wages are birr. 1801 to 2400 per month, the incidence of child labour is only 8 %.

Table 4.5: Distribution of children activity by household income

Income per month		Up to 600		601 to 1050		1051 to 1800		1801 to 2400	
Activity	Parent	n	%	n	%	n	%	n	%
Work only	My	59	43	53	38	15	11	11	8
	Fy	50	36	42	30	20	15	17	12
	Hhy	46	33	40	29	25	18	20	15

Source: Own Survey

Where, My stands for mother's income & Fy stands for fathers income while Hhy is household income

4.1.6: Distribution of children activity by household educational level

Uneducated or poorly educated parents are another cause of child labour. There is an inverse relationship between parental education and supply of child labour. Educated parents are well aware of the worth of educating their children. Illiterate parents consider that sending their child to school is very costly and just wastage of time and money. So they take into account the direct and opportunity cost of educating their children. Table 4.6 shows a negative relationship between parental education status and child labour. As the educational level of parents increases, the prevalence of child labour decreases. The highest incidence of child labour is in the households where the parents have no education. The table shows that near 61% of working children's father have no formal educations or can only read and write; in case of mother's education this figure goes up to 67 %. It can be seen that mother's education is closely correlated with child labour as compared to father's education. Incidence of child labour is 12 per cent, where the mother's educational level is Secondary.

Table 4.6: Distribution of children activity by household educational level

Educational Level		Illiterate		Read and Wright		primary		Secondary	
Activity	Parent	n	%	n	%	n	%	n	%
Work only	Mlit	47	39	34	28	26	21	15	12
	Flit	38	31	36	30	21	17	16	13
	Hlit	40	33	34	28	21	17	16	13

Source: Own Survey

4.1.7 Descriptive analysis on educational attainment of children on the study area

Table 4.7 shows the interaction between work hours and educational attainment. The more children have to work the less time they will have for study. Consequently, work may have an adverse effect on school attainment of children. It should be noted that significant difference is found in educational attainment of working and non-working children. About 41 % of children are lags behind from educational attainment of which 30 % are those children who are in work only category, 8 % are in work and school category, 3 % are from inactive category where as it is only 1 % who lags behind in school only category. However from the total sample size, children who achieved good performance are 59 %, of which 32 % are from work and school category, 5 % are from inactive category and 22 % are from school only category. But there is no children from work only category who attained normal educational progress .Thus from this discussion we can conclude that part time work help the child to get money for school and attained normal educational attainment while full time work has a negative impact on educational attainment of children. From the table below, working boys exhibit substantially higher percentage of lower degrees of school attainment (25 %) than working girls (16 %); only 2 % of girls who combine schooling and labour attain low educational progress whereas this is done by roughly 6 % of boys in the sample. Similarly 16 % of boys and 16 % of girls who combine schooling and labour attain high educational progress.

Table 4.7: Educational attainment of children

	performance																	
	0 (below normal progress)						1(normal or above normal educational attainment)						Total					
Activity	F	%	M	%	all	%	F	%	M	%	all	%	F	%	M	%	all	%
School Only	0	0	3	1	3	1	52	11	50	11	102	22	52	11	53	11	105	22
inactive	2	0	12	3	14	3	16	3	6	1	22	5	18	4	18	4	36	8
School &work	10	2	26	6	36	8	75	16	76	16	151	32	85	18	102	22	187	40
Work Only	64	14	74	16	138	30	0	0	0	0	0	0	64	14	74	16	138	30
All	76	16	115	25	191	41	143	31	132	28	275	59	219	47	247	53	466	100

Source: Own Computation

4.1.8 Value means, standard deviation and mean comparison.

Table 4.8 show that the maximum hours of work by children in Wolkite town during three months (January to March) when the data was collected is 58 hours while the minimum is 0 hours per week and the average hours of work is 25.4 per week . The minimum age of a sample child is 5 years while maximum years are 17 years old. The average age of child is 12 years old. The maximum age of household head is 73 years while the minimum age is 31 years. Number of infants range from 0 to 3. Household size ranged from 4.3 people to 11.4 people with an average size of 8 people.

Table 4.8: Value means and standard deviation of variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Cage	466	12.17811	3.383774	5	17
Cgen	466	.4699571	.499633	0	1
cage2	466	159.7318	77.95402	25	289
grade	466	4.658798	2.443666	0	8
Act	466	1.76824	1.106161	0	3
perform	466	.5901288	.4923383	0	1
Hhstast	466	.4656652	.4993558	0	1

Hgen	466	.3540773	.4787467	0	1
Milt	466	.4849785	.5003114	0	1
Hage	466	49.06009	7.747676	31	73
credit	466	.4484979	.4978749	0	1
Qualedu	466	.3669528	.4824915	0	1
Infat	466	1.392704	.9077151	0	3
Asst	466	.3519313	.4780859	0	1
Educ	466	109.2682	12.45633	75	120
Hw	466	25.41631	16.0836	0	58
hw2	466	904.1159	935.1569	0	3364
Hhsize	466	7.983476	1.704935	4.3	11.4
Flit	466	.3798283	.4858656	0	1

Source: Own Survey data

4.1.9 Socio-economic factors in the households that affect educational attainment of children

Socio-economic factors that affect educational performance of children in the study area are examined by using mean differences for continuous variables and group comparisons for discrete variables. For the mean comparison t-statistics was used to test the significance while chi-square test is used to test significance of group difference for discrete variables.

4.1.9.1: Mean comparisons of some variables between children who are lag behind and have good performance (continuous variables)

Age of the child, household age, hours of work per week and household size are significant at 1 %. This implies that those who achieved good performance are young, engaged in small or zero hours of work per week and more likely to have small number of household size than who are lag behind. (See Table 4.9)

Table 4.9: Mean comparisons of some variables between children who are lag behind and have good performance (continuous variables)

variables	Lag behind		Good performance		total		T value
	mean	Std. Dev	mean	Std. Dev	mean	Std. Dev	
Cage	14.43455	2.604583	10.61091	2.951782	12.17811	3.383774	14.4219***
Hage	50.40838	6.649949	48.12364	8.310093	49.06009	7.747676	3.1609***

Educ	112.1623	9.543245	107.2582	13.79393	109.2682	12.45633	4.2561***
Hw	37.65969	15.56597	16.91273	16.0836	25.41631	16.0836	17.7105***
Hhsize	8.593194	1.444702	7.56	1.745463	7.983476	1.704935	6.7335***
Hw2	1659.283	1016.158	379.6182	307.3715	904.1159	935.1569	19.6379***
Cage2	215.1047	65.10008	121.2727	77.95402	159.7318	77.95402	15.8482***

Source: own computation

*** indicates level of significance at 1%

4.1.9.2 Group comparisons of some variables between children who are lag behind and have good performance (discrete variables)

Chi square test was used to test group difference of Lag behind and good performance with respect to discrete variables. Sex of the child, welfare status of the households and literacy status parents are significant at 1 %. This implies that those who achieved good performance are more likely to have a literate mother and father, their household have access to credit, are non poor and enrolled in private education than who are lag behind. (See Table 4.10)

Table 4.10: Group comparisons of some variables between children who are lag behind and have good performance (discrete variables)

Description		Lag behind		Good performance		total		Chi2
variables	category	No.	%	No.	%	No.	%	
Cgen	Male	115	60	132	48	247	53	6.7453***
	Female	76	40	143	52	219	47	
Hhstatus	poor	154	81	95	35	249	53	96.1991***
	Noon poor	37	19	180	65	217	47	
Hgen	Male	134	70	167	61	301	65	4.3822**
	female	57	30	108	39	165	35	
Milt	illiterate	159	83	81	29	240	51	130.57***
	literate	32	17	194	71	226	49	
Credit	No access	120	63	137	50	257	55	7.719***
	have access	71	37	138	50	209	45	
qualedu	public	148	78	147	53	295	64	28.02***

	private	43	23	128	47	171	36	
Asset	Do not own	140	73	162	60	302	65	10.2325***
	own	51	27	113	41	164	35	
Flit	illiterate	134	70	120	44	289	62	9.11039***
	literate	57	30	120	44	177	38	

Source: Own Survey data

4.2. Econometric Analysis on the determinant of child time allocation and the impact of child Labour on educational attainment

Multinomial logit and probit regression models have been employed to analyse the determinants of child time allocation and the impact of child Labour on educational achievement respectively. In section 4.2.1, the relative risk approach will be used to interpret the results. To make the output more convenient for the discussion, school only category was set as base outcome. Therefore, the result of each outcome will be interpreted in relative to the base outcome. The impact of each variable on educational attainment is also evaluated by using the probability approach.

Before going to analyse the determinant of child time allocation and the impact of child labour on educational attainment, it would be good to evaluate how significant the fitted models. There are several reasons to prefer the likelihood ratio test to the Wald test. The Wald test leads to a type II error, because it inflates the standard error. Significance at the 5 % level or lower means the model with the predictors is significantly different from the one with the constant only (all 'b' coefficients being zero). It measures the improvement in fit that the explanatory variables make compared to the null model. Chi-square is used to assess significance of this ratio.

In this paper, with $df = 43$ chi square = 867.93, $p < .000$ and with $df = 16$ chi square = 385.81, $p < .000$ for the multinomial logit and the probit regression model respectively are obtained. Thus the null hypothesis which states that all the coefficients in the regression equation take the value zero is rejected and at the same time the alternate hypothesis which states the model with predictors currently under consideration is accurate and differs significantly from the null or zero is accepted i.e. it gives significantly better than the chance or random prediction level of the null hypothesis. These Indicates that the predictors as a set reliably distinguished among the child activities of schooling only, inactive ,school and work and work only category, and the

predictors as a set reliably distinguished whether the child attain normal progress or lag behind in educational achievement.

It is necessary to determine the magnitude of the collinearity of the independent variables. Collinearity can make the model coefficient unstable and adversely affect the coefficient interpretation but it has no effect on the model prediction. A higher value of collinearity elevates the standard error of the estimated coefficient, which decreases the coefficient level of significance. In econometrics there is a rule of thumb, which says that multicollinearity is a serious problem when the values of variance inflation factor (VIF) are greater than 10. Gujarati, 2004. However, the values of VIF for the continuous variables of the data are below 10 so that multicollinearity is not a problem in this case.

Without going into too much econometric detail, it is important to raise the subject of heteroscedasticity. When a Y variable is a dummy variable, it can only take on two possible values, and this leads to problems of non-constant variance of the error term. The point is that if we run the logit or probit model without bearing this problem in mind, we will have incorrect standard errors in our output tables. They will be systematically underestimated. This means that we could interpret coefficients as significant, when in fact they may not be. Stata can correct the standard errors. So the robust standard errors regression option was used to minimize the problem.

4.2.1 Econometric result on the determinants of child time allocation.

Table 4.11: Results of multinomial regression for inactive category (Relative risk ratio)

Inactive	Coefficient	Std. Errors	Relative risk ratio (RRR)	Std. Errors
Cage	-.3073844*	.1700186	.7353678*	.1250262
Cgen(female)	-1.266575	1.08883	.2817952	.3068271
Hhstast	-.487516	.8567866	.6141501	.5261955
Hgen(female)	.2921465	.8329418	1.339299	1.115558
Mlit	-5.669377***	1.196103	.00345***	.0041266

Inactive	Coefficient	Std. Errors	Relative risk ratio (RRR)	Std. Errors
Hage	.2135084***	.0661039	1.238014***	.0818376
Credit	-1.139174	.7996143	.3200833	.2559432
Qualedu	-1.930294**	.9125952	.1451056**	.1324227
Infat	-2.701054***	1.0125	.0671247***	.0679637
Asst	-1.765237**	.893258	.1711461**	.1528777
Educ	.0073558	.0302429	1.007383	.0304662
Hhsize	-.1930341	.2328895	.8244539	.1920067
Flit	-.1514899	.7874325	.8594266	.6767405
_cons	-.5642064	5.07678		

Source: Stata output.

(School only is a reference category)

***, ** and * indicate level of significance at 1, 5 and 10 % level of significance, respectively

Table 4.12: Results of multinomial regression for school and work category

School & work	Coefficient	Std. Errors	Relative risk ratio	Std. Errors
Cage	1.011178***	.2009833	2.748837***	.5524704
Cgen(female)	-2.46588***	.962063	.0849341***	.0817119
Hhstast	.3812102	.7723003	1.464055	1.13069

School & work	Coefficient	Std. Errors	Relative risk ratio	Std. Errors
Cage	1.011178***	.2009833	2.748837***	.5524704
Hgen(female)	-2.161082***	.8078212	.1152004***	.0930613
Mlit	-.9856678	1.07267	.3731899	.4003097
Hage	.3236433***	.0719213	1.382191***	.0994063
Credit	-.2347202	.763524	.7907921	.6037887
Qualedu	-.4820178	.7735354	.6175361	.477686
Infat	1.14658*	.708421	3.147411*	2.227592
Asst	.179388	.7840786	1.196485	.9381382
Educ	.0282731	.0281622	1.028677	.0289697
Hhsize	.2708867	.2594578	1.311127	.3401821
Flit	-2.211359***	.8221585	.1095517***	.0900689
_cons	-27.68505	6.655957		

Source: Stata output

***, ** and * indicate level of significance at 1, 5 and 10 % level of significance, respectively

Table 4.13: Results of multinomial regression for working only category (Relative risk ratio)

Working only	Coefficient	Std. Errors	Relative risk ratio	Std. Errors
Cage	1.34961***	.2364917	3.855922***	.9118933

Working only	Coefficient	Std. Errors	Relative risk ratio	Std. Errors
Cgen(female)	-4.220191***	1.065636	.0146964***	.015661
Hhstast	-1.142839	.8996681	.3189123	.2869153
Hgen(female)	-1.632517	.9369803	.195437*	.1831057
Mlit	-3.719946***	1.169526	.0242353***	.0283438
Hage	.3424676***	.0785078	1.408419***	.1105719
Credit	-.7425273	.8600412	.4759096	.4093019
Qualedu	-.8451562	.8861875	.4294903	.3806089
Infat	3.71262***	.8199887	40.96099***	33.58755
Asst	-.1872971	.8930195	.8119657	.7251012
Educ	.0319189	.0342176	1.032434	.0353274
Hhsize	.848573***	.2974145	2.336311***	.6948526
Flit	-1.784707**	.9231904	.1678462**	.191954
_cons	-41.92478	7.713267		

Source: Stata output

(School only is a reference category)

***, ** and * indicate level of significance at 1, 5 and 10 % level of significance, respectively

Age of child (Cage): Because of the small human capital of working children, the works that they carry out are generally physical and manual tasks which do not necessitate a particular training. This is what justify, as we were expecting it, that the marginal propensity of children to carry out a job increases with age. The interpretation may be that the more a child grows up, the more he/she is apt to work. As the age coefficients in the above table shows, the probability of working and ‘combining work and study’ increases with age relative to schooling only and significant at 1% level of significance. More specifically, if the child age increase by one unit (year), the (RRR) of school and work and working only relative to schooling only will be increased by 2.8 and 3.9 unit respectively while holding all other variables in the model constant.

But for inactive children, if the child age increases by one unit (year) relative to schooling only the (RRR) is decreased by 27 percent.

Gender (Cgen): Now let us turn to the gender coefficient. The result that I obtained from the econometric model for gender is to somewhat in a different line with past research done on child labour and schooling determinants. As discussed in the literature section female children are more likely to combine school with work than male children. In the above result, however, female children are less likely than their male counterparts to fall in working only or to combine school with work relative to schooling only. This is mainly because the data was collected in the town where there are no significant household chores which make majority of girls busy as compared to rural area. It is found that boys are more likely than girls to have to work and marginally more likely to combine school with work than study full-time. Moreover, holding all other variables constant, being female, the (RRR) of inactive, work and school and working only relative to schooling only will be decreased by 0.72, 0.91 and 0.98 units or simply the relative risk ratio will be 0.28, 0.09 and 0.02 respectively.

Education of Parents(Mlit, Flit): Among parental characteristics, both the education of father and mother has significant impact on child labour and schooling decision. Consistent with the theoretical assumption, empirical findings also reveal that the higher level of education of parents decreases the likelihood that a school-age child will specialize in work only or combine school with work relative to the likelihood that the child will study only.

Maternal education level significantly decrease child work and linked with fewer children having to combine school and work. This not only implies that children of educated mothers are more likely to attend school, but also that maternal education has a more pronounced positive effect on child schooling when women can decide freely without male intervention. More specifically, if mother can read and write relative to being illiterate, the (RRR) of inactive, work and school and working only, relative to schooling only will decrease by 0.996, 0.627 and 0.976 units or the relative risk ratio will be 0.004, 0.373 and 0.024 respectively, holding all other variables constant. Except for school and work category the other two categories are statistically significant at 1% level of significance. This suggests that women's empowerment has a significant positive relationship with human capital development.

Similarly Father's education also appears to have a significant role to play on child time allocation. The relative risk ratio shows that if father can read and write relative to illiterate father the probability of inactive, work and school and working only, with reference to schooling only will be decreased by 0.14, 0.89 and 0.83 points. This shows that children from households with their household head having at least primary education to be more likely to attend school and less likely to engage in exclusive market works.

Credit (Cred): Child labour is considered as a hedge against risk and uncertainty, an insurance against unforeseen losses in income that may threaten the survival of the household. Thus, having more children and allowing and even forcing children to engage in work is a risk-reducing strategy for most poor families and underscores that the daily need for subsistence is more immediate and of paramount concern. In economic terminology, intense poverty shrinks the time horizon of households to the short run. This means that households are willing to forego future income for current consumption; thus, future benefits have very little value to households whose immediate concern is survival.

More specifically, those children whose parents do have access to credit are 0.68, 0.21, 0.52 times less likely to become inactive, combine school with work and working only children, respectively, than those children whose parents do not have access to credit with respect to schooling only children, while holding all other variables in the model constant.

Wealth (Asset): An outstanding facet from different literature is that, on average, the children of asset owned households are more likely to work and also less likely to be in school than the children of households who don't have. This is what is referred as the wealth paradox. In this study the coefficient on asset is negative on inactive and working only children and is positive for those children who combine school with work. Specifically, children from asset owned families are 0.83 and 0.19 times less likely to become inactive and working only respectively than those children whose families don't possess any kind of durable asset. But children from asset owned families are 0.2 times more likely to combine school with work than those children, whose families don't possess any kind of durable asset, holding all other variables in the model

constant. Indirectly confirming that households with asset are less likely to send their children to work or combine school with work than households who don't own any kind of asset

Family Size (Hhsize): A positive coefficient in the case of household size indicates that the likelihood of a child attending school decreases in larger households. Meaning an increase in family member in the household raises the probability that a school-age child will work and study or work only relative to study only category. Specifically, if family size increases by one unit (number), the (RRR) of work and school and working only relative to schooling only will be increased by 0.31 and 1.34 units respectively while holding all other variables in the model constant. This is probably because larger families demand more time dedicated to household activities.

Poverty (Hhstast): Poverty of a household, as has been discussed in the literature, there shouldn't be any doubt in its role in the dynamics of child labour. As we can see from table 4.11, 4.12 and 4.13, the relative risk ratio of the household status for inactive, school and work and working only relative to schooling category is 0.61, 1.46, and 0.32 respectively. This finding implies that children of non-poor households tend to be in school or combine school with work rather than engaged in work only category and a negative coefficient of household status on working category implies that the children of the poor are more likely to work than the children of the rich. In short the result shows that poverty pushes children in to the labour market.

Infant (Infat): An increase in the number of pre-school children reduces the likelihood of full-time schooling and indicates that schooling will be part-time with work. Theory also assumes that additional number of pre-school child tends to withdraw school-age children from schooling to work by the increased demand for child care time or by the increased cost of raising pre-school children. Table 4.11, 4.12 and 4.13, shows that if the number of infants increases by one unit, the (RRR) of combining work and study relative to schooling only increased by three units, or has working only increased by 41 units. However, it decreases the probability that the child is 'idle' by nearly one unit. The coefficient of RRR is statistically significant at 1% level of significant for work only category and for school and work the coefficient is significant at 10 % significant level. The presence of pre-school aged babies (aged 5 or younger) is negatively

correlated with the likelihood of children's schooling. One reason for this result is that some children need to work to raise income sufficiently to allow their siblings to go to school.

Quality of education (qualedu): There are good a priori reasons to expect that the quality of the school matters in the household's decision about how best to use children's time. Alternatively, for a given amount of time spent at school, higher school quality creates more human capital, thus increasing the returns to time spent in education. Indeed, the effect of school quality can be rationalized within this interpretative framework in terms of whether a child is enrolled in private or public school. This study shows that school quality, private education, is negatively associated with all the three categories relative to the base outcome. More specifically, if the child is enrolled in the private school, the (RRR) of inactive, work and school and working only, relative to schooling only will be decreased by 85, 38 and, 57 % or the relative risk ratio is 0.15, 0.62 and 0.43 respectively. This result coincide with the well-known fact that the private schools are better than the relatively low-quality, public schools.

Education Cost (Educ): Education can have both direct and indirect costs. The direct costs include school fees, uniforms, required school materials, and so on. The indirect costs are represented mainly by the opportunity cost of time and by the cost of transportation to the nearest school. Thus a rise in the price of education affects the decision to send children to school to combine school with work, or to remain idle. In this paper, if the cost of education increases by one unit, the (RRR) will be increased by net 1% for inactive children and by net 3 % for both who are combining school and work and those who exclusively engaged in working only category, while holding all other variables in the model constant. This means for any given number of children, a decrease in cost of education will reduce the price of the future consumption of children, and will thus increase schooling at the expense of child labour.

Household head age (Hage): The result also indicates that as age of the household head increases the probability of child working also increase. More specifically, if the Head age increase by one unit (year), the (RRR) of inactive, work and school and working only, relative to schooling only will be increased by net 24,38 and 41 %, respectively, or the respective relative risk ratio will be simply 1.24, 1.38 and 1.41 while holding all other variables in the model

constant. This could be due to the increased uncertainty of enjoying the return from child schooling as the household head grows older.

Head gender (Hgen): Children living under the authority of a woman (head of the household) give less time to work in comparison with those living in households headed by men; women heads of households put a lot of time into domestic works in order to allow the children to have more time for their studies. In these households, children have higher and significant probabilities of going to school. The coefficients of the relative risk ratio of household head gender relative to school only are negative for school and work and work only children. In female headed households the relative risk ratio for inactive, school and work, and work only children relative to school only as shown in table 4.11, 4.12 & 4.13 is 1.34, 0.12 and 0.20 respectively. More specifically, if the household head is female, the (RRR) of work and school and working only, relative to schooling only will decrease by 0.115, 0.015 respectively. Meaning children are more likely to attend school in female-headed households with only 0.12, and 0.20 probabilities to fall in work and schooling and work only respectively relative to school only. Whereas the probability of children to be idle in female headed household will be increased by 34 percentage point.

4.2.2 Econometrics Results on the impact of child Labor on educational attainment.

Table 4.14: Econometric results on probit regression for school attainment

Variables	Coef.	Robust Std. Errors	dy/dx	Std. Errors
Cage	-.2784016***	.0542101	-.1096915***	.02122
Cgen	.6877029***	.2419839	.2649543***	.08888
Hhstast	.6540221***	.1887722	.2523526***	.06967
Hgen	-.2860481	.2292313	-.1129703	.09037
Mlit	1.273399***	.1914431	.4692291***	.06097
Hagec	-.005174	.0130959	-.0020386	.00516
Credit	.3058331	.197393	.1197328	.07641
Qualedu	.1465125	.1975042	.0574886	.07716
Infat	-.0085514	.1347142	-.0033693	.05307

Asst	.2305541	.1969347	.0901064	.07614
Educ	-.014939**	.0069563	-.005886**	.00276
Hhsize	-.1015498*	.0622284	-.0400111*	.02442
Flit	.4795286**	.204026	.1852216**	.07655
Hw	.1810631***	.0271182	.0713397***	.01069
Hw 2	-.0038804***	.0004646	-.0015289***	.00019

Source: Stata output

***, ** and * indicate level of significance at 1, 5 and 10 % level of significance, respectively

Age: Children seem to have an increasing propensity to drop out of school as they become older perhaps due to increasing labour market opportunities. The negative coefficients of age measured by the number of years indicate that school attainment decreases with the age of a child. This means that if age increases by 1 year, the probability of educational attainment by the child will decrease by 11 percentage points and the coefficient is significant at 1 % level of significance.

Gender: Gender specific results once again demonstrate that work has much harmful effect on boy's grade attainment than that of girls'. Being female for example increased the probability of school attainment by 26 percentage points and it is also statistically significant at 1 % significant level. This would imply that boys' schooling is in greater danger of being displaced by work than girls'. The result for this variation is due to the fact that male children are more specialized in working only category than girls.

Education: Now let us turn to the results of education. The above table revealed that Parental education has much significant effect on schooling progress than other variables. In the case of Mother's education if mother can read and write relative to being illiterate, increased the probability of school attainment by 47 percentage points. Similarly, relative to the reference category of illiterate father, children whose father can read and write increased the probability of school attainment by 19 percentage points. And the effect is statistically significant at 1 % for mother education and the effect for father is statistically significant at 5 %. This is because more educated parents send their children less to work and more to school. Hence it can be concluded that parents' education plays an important role to improve child's schooling progress.

Access to Credit: Raw (8) of Table 4.14 reports the results of the effect of credit on schooling. The positive coefficient on credit shows that credit has a positive effect on schooling. This means that for a one unit increase in access to loan size increased the probability of school attainment by 12 %.

Wealth (Asset): Additionally wealth of the household as reflected in whether the household owns property has positive effects on schooling outcome. In Raw (11) of Table 4.14 Wealth has the expected positive effect on schooling outcome .Meaning an access to asset ownership increases the probability of school attainment by 9%.

Family size: Family size was also found to be significant at the 10 % significant levels. Meaning children from larger families have lower levels of educational attainment. More specifically an increase in household size by one unit, reduces the probability of school attainment by 4 %, while other variable in the model constant. This results show that the educational attainment of the respondents decreased as the number of children in the family increased. The possible explanation for this is that as monetary resources and parents' time were spread among more children, the amount of education would suffer.

Welfare status of the household: In section 4.2.1 it was found ambiguous result in the impact of poverty in child time allocation. However, in terms of school attainment the effect of welfare of the household is rather strong and positive. That is children who are from rich households increased the probability of school attainment by 25 % than children who are from poor households and also it is statistically significant at 1 % level of significance. This is because as income increases, consumer products, which enhance human capital, are more abundant in the household. The opportunities to purchase and use learning devices, such as, text books, books, pencils etc. are more common. The presences of these resources aid the children to promote education and this enhances accumulation of human capital.

Cost of education: Despite government policy towards keeping the cost of primary school as low as possible, they remain an unwelcome expense. When schools adopt an inflexible attitude to uniforms, they can exacerbate the social exclusion faced by children from families living in poverty. An additional amount of school expenditure to uniforms, extra-fees, text books, books, pencils etc. tends to decrease the levels of education of the child. In the Stata out put an increase in the cost of education by one unit reduced the probability of school attainment by 1 %.

Head gender: Table 4.14 reveals that Hgen (female=1) is negatively associated with educational attainment of children. That is being female head reduced the probability of school attainment by 11 %. Thus being female household head tends to reduce the progress of child's educational attainment. This is because male headed households have lower probability of being poor than their female headed counterparts and thus children in male headed households are less likely to be poor compared to those in female headed households. The possible reason for this could be women generally and traditionally have less access to productive assets, lack of opportunities for decision making, low educational background and less access to social and interpersonal networks than their male counterparts. This indicates that educational attainment of children in Wolkite town is constrained by the tradition of male dominance in household-decision making.

Quality of education: The private regime is more efficient than the public education regime through the incentives it creates, linked to the quality of education. Besides as can be shown in Table 4.14 as compared to the public education system, the private regime increased the probability of school attainment by 6 %. School quality has a positive effect on the school attainment of children.

Thus a general finding from a comparison of the signs and significance of the coefficients from the two models is that factors that raise the probability of child labour also cause a child to lag behind in school. Therefore, the inverse relationship between allocating child time to work and a child's educational attainment is confirmed.

Hours of work: Finally let see the impact of hours of work and its square on educational attainment. As can be observed in Table 4.14 and row 15 and 16 the coefficient estimates for child labour hours and child labour hours (squared) are statistically significant at 1 % levels of significance, but are of opposite signs. The estimated positive coefficients of child labour hours suggest that the adverse marginal impact of child labour hours on the schooling variable initially weakened by the positive impact of child labour. In the Stata out put an increase in hours of work by one unit increased the probability of school attainment by 7 % .This result shows that an increase in child labour does not necessarily result in a trade-off with human capital investment and increases in schooling do not necessarily translate into declines in child labour. This is because the positive impact of increased financial resources on education might outweigh the

negative impact of reduced time for study. This simply means that children's labour market participation raises the financial resources that can be spent on their education.

However the negative magnitude of the estimated coefficients of the work hours (squared) variable support the proposition that work hours adversely affect the probability of the child attending school after some threshold labour hours of work. This clearly indicates that the hours worked by children has an inverted U-shaped relationship with schooling outcomes. Therefore, finding a turning or trade-off point between hours worked in child labour and a child's education is rather simple. As indicated by the empirical model the first order condition with respect to hours of work gives us the threshold labour hours of work. In particular, the trade-off point in this thesis is reached at approximately 23.3 hours per week. This finding implies that children in Wolkite town could possibly work up to 23.5 hours per week without it having a negative impact on their education. However, working beyond this threshold of 23.3 hours per week will have a negative effect on their schooling.

As shown in the descriptive part the average hour of work in Wolkite town is 25.5, which is above the threshold level of 23.5 hours of work per week. This implies that, since average hour of work exceeds the threshold level, child labour decreases the educational attainment and human capital formation of children in Wolkite town.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1. Summary of findings and Conclusions:

The UN Convention on the Rights of the Child defines a working child as one who is engaged in any work that is likely to be hazardous or to interfere with the child's education or to be harmful for the child's health, physical, mental, spiritual or moral or social development. And for over a decade this practice is considered exploitative by many international organizations and is illegal in many countries. ILO's Child Labour Convention (No. 182) focused world attention on the need to take immediate action to eradicate those forms of child labour that are hazardous and damaging to children's physical, mental or moral well-being.

Many children are working in a variety of situation all over the world, ILO (2008) reports that 215 million children were engaged in child labour. The incidence of child labour recorded by the ILO (2008) is 41% for sub- Saharan Africa, 21% for Asia and 17% for Latin America. This raises the question: does child labour affect the educational attainment of school aged children? To answer this question, multinomial logit and probit regression model was employed to analyse the determinants of child time allocation and the impact of child labour on educational achievement, respectively.

This paper first examines the household decisions involving child schooling and child labour, it then looks at the effect of work on schooling progress. In the analysis a considerable and significant trade-off between child labour and school attainment was observed.

Cage is a variable that measures the child's age in years. Children have an increasing propensity to specialize on school with work and work only category as they become older. One explanation for this result is that as age increases children either have completed their studies or failed to continue. This implies that the probabilities of lagging behind increases with age of the child. The possible explanation is the elder children have more earning capacity as compared to younger ones which make them drop out school and engage in work.

Most of the studies on child labour find that girls are more likely to combine study and work than boys. However, the significant and positive gender coefficient of this paper suggests that boys are more likely than girls to combine schooling with work in Wolkite town. The probit regression estimates also confirm that work has much devastating effect on school attainment of boys than girls.

The empirical findings from multinomial logit estimate also reveal that the education of parents significantly increases the probability that a school-age child will specialize in study only. This implies that the more the parents are educated the less of their children to combine school and work, to working only or to become inactive category and the more the child educational attainment is realized.

Children from households with lower income are more likely to work. On the other hand, the evidence also speaks that children from richer households are less likely to work because they are more highly motivated or because their parents value education more.

On the other hand, while it is true that age of the child, parental education, hours of work and welfare status of the household play an important role in child time allocation and hence educational attainment of children, some other factors, such as the cost of education, quality of education and household income also play an important role in child time allocation and hence educational attainment of the child

In summary, the relationship between hours worked by the children and schooling outcomes, whether positive or negative, is not linear along hours of worked by the children; in fact it change sign from positive to negative as the hours of worked by the children is reached the threshold point (23.3) after this point there become trade-off between hours worked by the children and educational attainment. This study provides evidence of an observed trade-off between child labour and educational performance of children. This is because in the study area the average hours worked (25.5) is above the threshold level of 23.3 hours worked per week. This implies that child labour decreased the educational attainment of children in the study area.

5.2. Recommendations

The results of the study indicate that there is a significant difference in the school performance of working and non-working children. Therefore, I recommend the following solutions to reduce the incidence of child labour and to improve educational achievements based on the findings of this study

- High per capita income: From the finding it could be observed that economic progress is important to reduce the incidence of child Labour and to improve educational achievement. This is because the pace of child Labour appears to slow down as educational attainment is improved with economic progress. Consequently, policies that raise per capita income can lower the incidence of child labour and improves educational attainment of children.

- Parent education: Apart from the obvious result of improving children's education levels, there are several social and economic benefits of increasing parent education especially mothers'.
 - First, it would likely increase the employment opportunities of women, which would ultimately increase household incomes.
 - Second, increasing mothers' education will raise women's status in society and improve gender equality.
 - Third a women's educational level is the best predictor of how many children she will have. Thus the above discussion leads us to conclude that investment in adult literacy programs especially on women is likely to have a far-reaching impact and create a virtuous circle of more educated mothers, more employment opportunity for woman, increased income for the given household and which in turn leads to improving a child schooling progress over time.
- Public investments in pre-school programs would have positive effects not only on the pre-schoolers themselves, but also on older siblings, who would otherwise have to stay home to care for them.
- Moreover, the implications from the marginal effects of cost of education imply that education policy through lowering the costs of schooling as well as increasing school availability may well improve educational attainment of children.
- Finally efforts should also focus on other interventions, such as increase enrolment subsidies, increase old age pension, increase teacher's pay, empowering women, creating social awareness on society etc. to improve the human capital attainment of children.
- Last but not least government role takes the lion's share in changing the situation. Government should provide schooling facilities for those who are unable to afford school facilities including half day meal programmes since children can't learn with empty stomach. Promoting private investment, NGO participation on schooling and creating competitive environment will also significantly improve children's educational attainment.

APPENDIX I

Definition of local terms

- Injera - Local food used as bread
- Kollo - Roasted Barely
- Tej - Local drink brewed from honey
- Tella - Local beer
- Araki - Home brewed liquor which is highly alcoholic
- Chat - Green leaf used to stimulate the body
- Selvage - Used cloths
- Kebele - Urban Dwellers Association

APPENDIX II

Questionnaire for interview about children with parents

Questionnaire ID:.....Date of Interview:...../2015

Village:.....kebelehouse number

Signed

Introduction:

I am conducting research for the Partial Fulfilment of the Requirements for the Degree of Master of Arts in Economics on the impact of child labour on educational attainment inWolkite town. The research can only be successful with your cooperation. So, I would like to ask you to participate by answering questions related to the above topics. All information you provide will be kept strictly confidential and will be used for a summary report only. Thank you very much for your time and cooperation.

I. Parents and Head of the Household Characteristic's:

Characteristic's:	Head of the Household	Father	Mother
Gender : Male=0, Female=1			
Age in Years			
Education: Illiterate=0,read and write=1,			
Now employed :Yes =1,NO =0			
If yes what is the Income birr./Month			

II Household Characteristics:

1. Please, fill the following Table concerning your family

No	Name of households members	Sex	Age
1			
2			
3			
4			
5			
6			
7			

2. Assets of household Nil =0 Present =1

3. If the answer is present what is that (more than one answer is possible)

A .own a house b.car c. jeweler d. bajaje e. shop f. own business g.TV h. mobile .i other specify

4. Income Sources

Please fill the following about your sources of income:

No	Income Source	Amount (in Birr) per month
1	Employment at Public Sector	
2	Private Sector	
3	Business	
4	Remittance	
5	Total Non-child household income	
6	Child income	
7	Total house hold income	

5. Why the child/children forced to work or combine school with work instead of schooling only? (More than one answer is possible Indicate the most important reasons)

- a. Supplement family income because the family needs money for food for survival
- b. The family needs money to pay off debts
- c. Learn skills
- d. Help in household enterprise...
- e. Cannot afford school fees.
- f. Education is not useful because there is/are graduate student/s in home who did not get job
- g. To have money for schooling (pay school fees or buy school supplies)
- h. To have money for personal needs
- i. To get away from the house
- j. Don't like school/cannot study
- k. Others, please specify

6. Credit Access

- i. Did you receive any credit service in the past 12 months? A. Yes B. No

- ii. If yes, how much money did you borrowed? (In Birr) _____.
- iii. If yes what are the sources of credit? A. Informal B. Formal
- iv. If informal why use informal credit services?
- A. Flexible B. No formal credit institution available
- C. Easily accessible D. Collateral requirement of formal institution
- E. Other (specify) _____

7. How much does the household spend for the following non-food items?

No	Non-food items	Amount of Expense in Birr		No	Non-food items	Amount of Expense in Birr	
		Per month	Per year			Per month	Per year
1	Utensils			7	House rent		
2	Clothing and foot wear			8	electricity		
3	Medical care			9	water		
5	Transfer to others			other			
6	Capital items						

8. How much does the household spend for the following food items?

No	Food items	Quantity	Expense per month in Birr	No	Food items	Qty	Expense per month
1	Teff			15	Onion		
2	Maize			16	Butter		
3	Barley			17	Cabbage		
4	Wheat			18	Potato		
5	Sorghum			19	Milk		
6	Horse beans			20	Millet/dagussa		
7	Chick			21	Shiro		

	peas						
8	Lentils			Others			
9	Oil			20			
10	Salt			21			
11	Sugar			22			
12	“Paper”			23			
13	Coffee			24			
14	Tea			25			

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PROJECT PROPOSAL PROFORMA

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Study Center Code: 8105

Title of the Project: **The Impact of Child Labour on Educational Attainment**
(A Case Study of Wolkite Town in Ethiopia)

(By the Supervisor)

I hereby certify that the proposal for the project entitled The Impact of Child labour on education (a case study of Wolkite town in Ethiopia) presented by AtoZaidMihretu has been prepared after due consultation with me. I agree to supervise the above mentioned project till its completion.

Signature: -----

Name: -----

Designation: -----

Address: -----

A Project Proposal On
The Impact Of Labour On Education
(A Case Study Of Wokite town in Ethiopia)

By: Zaid Mihretu

Enrol. No. 099121223

Addis Ababa, Ethiopia

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February 10, 2015

1. INTRODUCTION

1.1 Back ground of the study

This paper will discuss the issue of child Labour in connection with education. Connecting child Labour with educational attainment is very logical, as child Labour is defined as an economic activity of a child that affects the child's educational activities. Therefore, it points to a normative view that every child, regardless of his or her background, should have the right to receive at least a minimum amount of schooling. This is because childhood is considered as the best time for the acquisition of education. So childhood should be devoted to education and accumulation of human capital, particularly through formal education. Hence, any discussion of Child Labour will lose importance if schooling is not incorporated into it. Also, as it is a widely held view that work reduces the time available for schooling by consuming the child's time with the alternatives of schooling. It is therefore important to address the incidence of child Labour on schooling performance and their future career.

The definition of Child Labour varies from one country to another country and from one individual to another individual. As a result, there is a variation in findings in different studies. So in this paper, I combine three very important and fundamental laws about children to find the precise definition of child Labour and to categorize child activities. First in its recent global estimates of child Labour, the ILO defines child Labour as consisting of all children who are economically active excluding those children who spend less than 14 hours a week on their jobs, unless their activities or occupations are hazardous by nature or circumstance. Second, according to the Ethiopian revised family code the parents bear full responsibility about their children until the child becomes 18 years old (Getaneh, 2000). Third, according to Ethiopian ministry of education, Primary school starting age (years) in Ethiopia is 7 years as of 2010. And since this paper want to examine the impact of child Labour on educational attainment, child labor in this paper defines as those children in the age range between 5 and 17 years and who spend more than 14 hours a week in doing any kind of jobs.

1.2 Statement of the problem

Childhood is the most innocent stage in a human life. It is that phase of life where a child is free from all the tensions, fun-loving, play and learns new things. Childhood represents the most tender, most formative and most impressionable stage of human development (encyclopedia). But this is only one side of the story. The other side is full of tensions and burdens. Here, the innocent child is not the sweetheart of the family members; instead he is an earning machine working the entire day in order to satisfy the needs and wants of his family and the joy associated with the birth of a child is short-lived as the childhood is subjected to a process of sex based discrimination and ruthless exploitation as soon as a child crosses infancy period.

International Labour Organization (ILO) (1996) defines child labour as work that deprives children of their childhood, their potential and their dignity. It refers to work that is mentally, physically, socially or morally dangerous and harmful to children; and interferes with their schooling.

The UN Convention on the Rights of the Child defines a working child as one who is engaged in any work that is likely to be “hazardous” or to interfere with the child’s education or to be harmful for the child’s health, physical, mental, spiritual or moral or social development.

School is the main alternative to child labor. Literacy and mathematical skills from the early childhood age are increasingly important in determining the child’s future career and in today’s rapidly changing technological environment and globalizing economy. It is, again, relevant to stress that education is a priority area, since two out of eight MDGs are related to it. This means that education has an intrinsic relevance. Moreover, it is often admitted that education can be a key factor for the obtainment of the other goals, such as reducing poverty and infant mortality, and improving maternal health. It is also quoted by IGNOU that **“Education is a liberating force, and in our age it is also democratising force, cutting across the barrier of caste and class, smoothing out inequalities imposed by birth and other circumstance.”** in every text book of the IGNOU reading material which has a strong and universal message for the current and future generation.

Article 32 in the UN Convention on the Rights of the Child also states that: “member countries recognize the right of the child to be protected from economic exploitation and from performing any work that is likely to be hazardous or to interfere with the child’s education, or to be harmful to the child’s health or physical, mental, spiritual, moral or social development. Member countries shall take legislative, administrative, social and educational measures to ensure the implementation of the present article.

Ethiopia has ratified the UN Convention on the Rights of the Child, ILO Minimum Age Convention No. 138, and ILO Convention No. 182 on the Worst Forms of Child Labor. UN Convention on the Rights of the Child has also been ratified by Ethiopia. It protects the child from economic exploitation, sexual exploitation, sales and traffic, recruitment in armed conflicts, participation in illicit production and trafficking of drugs etc. Ethiopia has ratified the Convention on the Rights of the Child by Proclamation No.10/1992. The FDRE Constitution under chapter three recognizes the rights of the person not to be held in slavery and servitude. When we come to children’s right, article 36(1) (d) states that every child has the right ‘not to be subjected to exploitative practices, neither to be required nor permitted to perform work which may be hazardous or harmful to his or her education, health or well-being’.

Though the Ethiopian government has ratified the UN Convention on the Right of the Child, Ethiopia has one of the highest rates of child Labour in the world. Of all 5-to 14-year-olds, more than 7.5 million children in absolute terms, were at work in economic activity (CSA, 2008). This might be related to several factors like poverty, inequality, socio-economic vulnerability, inadequate and inappropriate education opportunities and cultural norms and value.

The existence of these problems inspire the researcher to conduct a case study in Wolkite town in order to address the main factors affecting child labor and show the trade-off between child labor and educational attainment.

Specifically, in this paper the following questions are to be examined

7. What are the major factors for the existence of Child Labour in Wolkite town?
8. What are the Child Labour practices in terms of type, quantity and quality in the town?
9. What are the reasons that drive children to work or combine school with work instead of letting the child to learn only?
10. Is there any trade-off between working hours and schooling outcome?

11. If there what is the threshold hours of work?

12. Do any of these important questions have different answers for boys and girls?

1.3 Objective of the study

1.3.1 General Objective: The general objective of this paper is to investigate how child labour affects educational attainment and hence show the trade off between hours of child work and schooling outcomes of children.

1.3.2 Specific Objectives: The specific objectives of this study include:

- Provide an overview of the nature, extent and predominant forms of child Labour based on available data disaggregated by age, sex and geographic distribution in Wolkite town
- Analyse the underlying causes of child Labour, particularly economic factors and issues relating to education (non-availability of schools, quality of education, etc.).
- Estimates the trade-off hours between hours supply of child Labour and schooling outcomes.
- examine the implications of the current child Labour on the educational attainment of children in Wolkite town
- Provide empirical evidences and hence guidelines for policy making in the area of child labour and opens an agenda for further research.

1.4 Methodology of the project study

a) Data source and Type: Both primary and secondary data sources will be used in building this project paper. A descriptive research design-survey method will be used to serve the purpose of the research paper. Self-administered Primary data will be collected with the help of questionnaire in collecting the primary data source. Face to face interview method for own personal consumption is also used by the researcher.

b) Sampling Design: -to capture the exact information and reality on the ground, the researcher employed a purposive type of sampling. To determine the sample size, the researcher also use the Pagoso.C. Formula, i.e.
$$Fn = \frac{n}{1 + \frac{n}{N}}$$

Where, $n = \frac{z^2 pq}{ME^2}$

N = Total household size in the study area (in Wolkite town)

F_n = Desired sample size which is going to be estimated

z = Standard normal variable at the required confidence level (z - statistic)

p = Estimated characteristics or proportion of the target population, that is 0.5

q = 1 - p

ME = Level of statistical significance set.

c) Method of Data Analysis: the techniques of multinomial logit and probit regression models would be employed to analyse the determinants of child time allocation and the impact of child Labour on educational achievement respectively. The data collected will be analyzed with the help of descriptive statistics (mean, median, correlation coefficient). Econometric analysis with the help of Multinomial logit and probit regression models will be employed to analyse the determinants of child time allocation and the impact of child Labour on educational achievement respectively.

1.5 Significance of the study

The rationale behind conducting this project study is to contribute to the growing body of literature on the cause of child Labour and its impact on human capital development process. The underlying premise is that letting children to school only constitutes the linchpin of human capital development process. It can at once be viewed both as the means as well as the end of development. The findings of this project study can also be used in guiding policy makers and development planners who are concerned about children issues while designing children related projects in the country.

1.6 Scope of the study

There are a lot of consequences of Child Labour such as long term and short term economic Impact of Child Labour, health impact of Child Labour, political implication of Child Labour,

environmental impact of Child Labour etc at different level of study i.e. at village level, country level or worldwide level. However, in this paper, only the impact of Child Labour on educational attainment in one of the Ethiopian village towns, Wolkite town will be discussed.

1.7 Limitation of the study.

One major problem of the data collection process on child Labour is the difficulty to get the precise definition of child Labour. Varying definitions of the term are used by international organizations, non-governmental organizations, trade unions and other interest groups. Another limitation is with the measurement of compensation is particularly complicated. This is because most children do not work for wages which make difficult to get a detailed data on child Labour to measure their Compensation. But to avoid this problem, I employed hours of work per week to measure the impact of child Labour on educational attainment.

Finally, it had been great if the research would have been conducted at national or regional level to get more information on child Labour and its impact on education. But due to time and cost limitations this paper only covers the impact of child Labour on educational attainment of children in Wolkite town.

1.8 Organization of the project paper

The study is conducted to outline the trade-off between child labour and educational attainment a case study in Wolkite town. Accordingly, in the first chapter an introduction, statement of the problem, objective of the study, scope of the study, methodology and organization of the paper are included. Whereas, chapter two of this paper describes review of literatures on definitions, the theoretical concepts of child labour analysis and empirical trends of incidence of child labour in developing countries. The third chapter tries to examine the analytical framework, the methodology of the study; the fourth chapter focuses on discussion and result presentation. Finally chapter five concludes the entire discussion and gives some recommendation.

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